# Watershed-driven relaxation labeling for image segmentat

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**Abstract**
Introduces an image **segmentation** method referred to as **watershed**-driven relaxation la is a hybrid **segmentation** process utilizing both **watershed** analysis and relaxation labelir **watershed** analysis is used to subdivide an image into catchment basins, effectively clust based on their spatial proximity and intensity homogeneity. Classification estimates in the are set for each of these catchment basins. Relaxation labeling is then used to iteratively r classifications of the catchment basins through propagating constraints and utilizing local i relaxation updating process is continued until a large majority of the catchment basins are classified. The method provides fast, accurate **segmentation** results and exploits the indi **watershed** analysis and relaxation labeling. The robustness of the method is illustrated th to other popular **segmentation** techniques

**Index Terms**
**Inspec**
**Controlled Indexing**
catchment basins classifications hybrid segmentation process image classifica segmentation intensity homogeneity iterative methods local information prop constraints relaxation theory robustness spatial proximity updating process analysis **watershed**-driven relaxation labeling

**Non-controlled Indexing**
catchment basins classifications hybrid **segmentation** process image classific image **segmentation** intensity homogeneity iterative methods local informatio propagating constraints relaxation theory robustness spatial proximity updati **watershed** analysis **watershed**-driven relaxation labeling

**Author Keywords**
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Abstract | Full Text: PDF (652)

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# Cooperation of color pixel classification schemes and col a study for microscopic images

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**Abstract**
We study the ability of the cooperation of two-color **pixel** classification schemes (Bayesiar classification) with color watershed. Using color **pixel** classification alone does not sufficie extract color regions so we suggest to use a strategy based on three steps: simplification, color watershed. Color **watershed** is based on a new aggregation function using local anc strategy is performed on microscopic images. Quantitative measures are used to evaluate segmentations according to a learning set of reference images.

**Index Terms**
**Inspec**
**Controlled Indexing**
Bayes methods image classification image colour analysis image **segmentati** microscopy

**Non-controlled Indexing**
Bayesian classification K-means classification aggregation function color **pixe** classification color regions extraction color **watershed** global criteria image **segmentation** learning set local criteria microscopic images reference imag

**Author Keywords**
Not Available

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# Model-based morphological segmentation and labeling of angiograms

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**Abstract**
A method for extraction and labeling of the coronary arterial tree (CAT) using minimal use single-view angiograms is proposed. The CAT structural description (skeleton and borders with quantitative information for the artery dimensions and assignment of coded labels, ba coronary artery model represented by a graph. The stages of the method are: (1) CAT trac (2) artery skeleton and border estimation; (3) feature graph creation; and (iv) artery labelin The approximate CAT centerline and borders are extracted by recursive tracking based or analysis. The accurate skeleton and borders of each CAT **segment** are computed, based homotopy modification and **watershed** transform. The approximate centerline and borders constructing the artery **segment** enclosing area (ASEA), where the defined skeleton and t considered as markers. Using the marked ASEA, an artery gradient image is constructed **pixels** (except the skeleton ones) are assigned the gradient magnitude of the original ima gradient image markers are imposed as its unique regional minima by the homotopy modi **watershed** transform is used for extracting the artery **segment** borders, and the feature g Finally, given the created feature graph and the known model graph, a graph matching alg appropriate labels to the extracted CAT using weighted maximal cliques on the associatio corresponding to the two given graphs. Experimental results using clinical digitized corona presented

**Index Terms**
**Inspec**
**Controlled Indexing**
angiocardiography diagnostic radiography edge detection feature extraction theory image segmentation medical image processing physiological models

**Non-controlled Indexing**
artery labeling artery segment enclosing area artery skeleton estimation borde estimation clinical digitized coronary angiograms coronary angiograms labeling artery model feature graph creation graph matching homotopy modification m medical diagnostic imaging model-based morphological segmentation morphol homotopy modification regional minima watershed transform
**Author Keywords**
Not Available

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# An improved watershed algorithm for counting objects in anisotropic 3-D biological images

Ancin, H. Dufresne, T.E. Ridder, G.M. Turner, J.N. Roysam, B.
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**Abstract**
Effective 3-D image processing algorithms are presented for automatic counting and analy anisotropic 3-D biological images that are collected by laser-scanning confocal microscop instruments, the x-y resolution is much better than the resolution along the z axis, hence tl 3-D) are anisotropic. In this work, the images are pre-processed by a 3-D extension of an algorithm, and the resulting images are binarized by a clustering based segmentation algc binary segmentation, some regions consist of individual objects while others are multi-obje extension of Vincent and Soille's watershed algorithm (1991) to anisotropic 3D spaces is u such cell clusters. The watershed algorithm is applied on marker functions that are genera combination of 3-D morphological inverse distance functions and 3-D image gradients. Ce such as volume, average intensity and locations, are calculated on the result of watershed algorithm has been successfully applied to the automated analysis of cell populations from biological studies involving large numbers of tissue samples

**Index Terms**
**Inspec**
**Controlled Indexing**
biological techniques biology computing cellular biophysics image reconstructi resolution image segmentation mathematical morphology optical microscopy

**Non-controlled Indexing**
3-D image gradients 3-D morphological inverse distance functions anisotropic 3 anisotropic diffusion algorithm automatic counting average intensity binary seg cell analysis cell clusters clustering based segmentation algorithm effective 3- processing algorithms image pre-processing improved **watershed** algorithm ir objects laser-scanning confocal microscopes marker functions multi-object clu anisotropic 3-D biological images object counting resolution voxels **watershe segmentation**
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